

ABSTRACT OF THE DISCLOSURE

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A laser annealing apparatus is provided in which laser light is irradiated onto an amorphous semiconductor layer placed inside an annealing chamber (100) through a chamber window (120), thereby poly-crystallizing the amorphous semiconductor film. Inside the annealing chamber 100, a low degree vacuum (about 1.3×10^{-3} Pa to about 1.3 Pa) is maintained at a room temperature. An inert gas such as nitrogen, hydrogen, or argon is introduced into the atmosphere while maintaining the low degree vacuum. As a result, the surface smoothness of the polycrystalline semiconductor layer is comparable to that resulting from high degree vacuum annealing, while, unlike high degree vacuum annealing, there is less contamination of the chamber window (120) and productivity is improved.